WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005NJ84B

Title: The Influence of Urbanization on Watershed Nitrogen Cycling Watersheds

Project Type: Research

Focus Categories: Water Quality, Hydrology, Geochemical Processes

Keywords: nitrogen cycling, nitrogen retention, urban land use, hydrology, ammonia, nitrate

Start Date: 03/01/2005

End Date: 02/28/2006

Federal Funds: $5,000

Non-Federal Matching Funds: $9,263

Congressional District:

Principal Investigators:
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Abstract

The hydrologic changes induced by urbanization can significantly modify the ability of riparian systems to process nitrogen. The increased percentage of impervious surface results in greater runoff of stormwater, which can cause incision of the stream channel. Along with the reduced infiltration, this can result in lower water tables within the riparian zone. Studies have consistently found that when the water table is close to the soil surface, there is increased potential for the removal and retention of nitrogen through denitrification and plant uptake. Drier riparian soils support high rates of nitrification, an aerobic process that converts ammonia to nitrate, which is easily transported to surface waters (Groffman et al. 2002). Thus, urban hydrologic changes have the capacity to change riparian zones from sinks to sources of nitrates in the landscape.

This research will determine how hydrologic changes resulting from urban land use influence the occurrence of these locations and periods of biogeochemical importance.